

AMENDMENTS TO THE CLAIMS:

Please amend Claims 61, 62, 63, 70, and 73 as follows:

1-60. (Cancelled)

61. (Currently Amended) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein the curvatures in the main and sub-scanning directions are non-symmetrical with each other with respect to the optical axis.

62. (Currently Amended) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein the curvatures in the main and sub-scanning directions are non-symmetrical with each other with respect to the optical axis,

wherein the optical magnification of said imaging lens in the sub-scanning direction is constant over the effective scanning region.

63. (Currently Amended) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein the curvatures in the main and sub-scanning directions are non-symmetrical with each other with respect to the optical axis,

wherein said imaging lens is a single lens.

64. (Previously Presented) An optical scanner according to claim 63, wherein said imaging lens satisfies the following requirement:

the entrance face of said imaging lens has a cross section taken in the sub-scanning direction which is concave at the center of scanning and convex at either end of scanning.

65. (Previously Presented) An optical scanner according to claim 64, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

66. (Previously Presented) An optical scanner according to claim 65, wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

67. (Previously Presented) An optical scanner according to claim 65, wherein said light source has a plurality of light-emitting portions.

68. (Previously Presented) An optical scanner according to claim 67, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

69. (Previously Presented) An optical scanner according to claim 61, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

70. (Currently Amended) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein the curvatures in the main and sub-scanning directions are non-symmetrical with each other with respect to the optical axis,

wherein said imaging lens has a surface that is aspheric in the main scanning direction, and

wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

71. (Previously Presented) An optical scanner according to claim 61, wherein said light source has a plurality of light-emitting portions.

72. (Previously Presented) An optical scanner according to claim 71, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

73. (Currently Amended) An optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein the curvatures in the main and sub-scanning directions are non-symmetrical with each other with respect to the optical axis,

wherein the optical magnification of said imaging lens in the sub-scanning direction is constant over the effective scanning region, and  
wherein said imaging lens is a single lens.

74. (Previously Presented) An optical scanner according to claim 73, wherein said imaging lens satisfies the following requirement:

the entrance face of said imaging lens has a cross section taken in the sub-scanning direction which is concave at the center of scanning and convex at either end of scanning.

75. (Previously Presented) An optical scanner according to claim 74, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

76. (Previously Presented) An optical scanner according to claim 75, wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

77. (Previously Presented) An optical scanner according to claim 75, wherein said light source has a plurality of light-emitting portions.

78. (Previously Presented) An optical scanner according to claim 77, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning

direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

79. (Previously Presented) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein each of the two surfaces is non-symmetrical with respect to the optical axis.

80. (Previously Presented) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein each of the two surfaces is non-symmetrical with respect to the optical axis,

wherein the optical magnification of said imaging lens in the sub-scanning direction is constant over the effective scanning region.

81. (Previously Presented) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein each of the two surfaces is non-symmetrical with respect to the optical axis,

wherein said imaging lens is a single lens.

82. (Previously Presented) An optical scanner according to claim 81, wherein said imaging lens satisfies the following requirement:

the entrance face of said imaging lens has a cross section taken in the sub-scanning direction which is concave at the center of scanning and convex at either end of scanning.

83. (Previously Presented) An optical scanner according to claim 82, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

84. (Previously Presented) An optical scanner according to claim 83, wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

85. (Previously Presented) An optical scanner according to claim 83, wherein said light source has a plurality of light-emitting portions.

86. (Previously Presented) An optical scanner according to claim 85, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

87. (Previously Presented) An optical scanner according to claim 79, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

88. (Previously Presented) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein each of the two surfaces is non-symmetrical with respect to the optical axis,

wherein said imaging lens has a surface that is aspheric in the main scanning direction, and



wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

89. (Previously Presented) An optical scanner according to claim 79, wherein said light source has a plurality of light-emitting portions.

90. (Previously Presented) An optical scanner according to claim 89, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

91. (Previously Presented) An optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein each of the two surfaces is non-symmetrical with respect to the optical axis,

wherein the optical magnification of said imaging lens in the sub-scanning direction is constant over the effective scanning region, and

wherein said imaging lens is a single lens.

92. (Previously Presented) An optical scanner according to claim 91, wherein said imaging lens satisfies the following requirement:

the entrance face of said imaging lens has a cross section taken in the sub-scanning direction which is concave at the center of scanning and convex at either end of scanning.

93. (Previously Presented) An optical scanner according to claim 92, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

94. (Previously Presented) An optical scanner according to claim 93, wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

95. (Previously Presented) An optical scanner according to claim 93, wherein said light source has a plurality of light-emitting portions.

96. (Previously Presented) An optical scanner according to claim 95, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

97. (Previously Presented) An optical scanner according to any of Claims 79 through 96, wherein for each of the two surfaces, the radius of curvature in the main scanning direction is not equal to the radius of curvature in the sub-scanning direction at the optical axis.

98. (Withdrawn) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein one of the two surfaces is non-symmetrical with respect to the plane containing the optical axis and the sub-scanning direction.

99. (Withdrawn) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein one of the two surfaces is non-symmetrical with respect to the plane containing the optical axis and the sub-scanning direction,

wherein the optical magnification of said imaging lens in the sub-scanning direction is constant over the effective scanning region.

100. (Withdrawn) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein one of the two surfaces is non-symmetrical with respect to the plane containing the optical axis and the sub-scanning direction,

wherein said imaging lens is a single lens.

101. (Withdrawn) An optical scanner according to claim 100, wherein said imaging lens satisfies the following requirement:

the entrance face of said imaging lens has a cross section taken in the sub-scanning direction which is concave at the center of scanning and convex at either end of scanning.

102. (Withdrawn) An optical scanner according to claim 101, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

103. (Withdrawn) An optical scanner according to claim 102, wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

104. (Withdrawn) An optical scanner according to claim 102, wherein said light source has a plurality of light-emitting portions.

105. (Withdrawn) An optical scanner according to claim 104, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

106. (Withdrawn) An optical scanner according to claim 98, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

107. (Withdrawn) In an optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein one of the two surfaces is non-symmetrical with respect to the plane containing the optical axis and the sub-scanning direction,

wherein said imaging lens has a surface that is aspheric in the main scanning direction, and

wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

108. (Withdrawn) An optical scanner according to claim 98, wherein said light source has a plurality of light-emitting portions.

109. (Withdrawn) An optical scanner according to claim 108, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.

110. (Withdrawn) An optical scanner having a source of a light beam, a deflector for deflecting said light beam and an imaging lens that focuses the deflected light beam to form a beam spot on a surface to be scanned, the improvement wherein the curvatures in a sub-scanning direction of two of the surfaces of said imaging lens vary continuously along a main scanning direction over the effective area of said imaging lens and independently of the curvatures in the main scanning direction, and wherein one of the two surfaces is non-symmetrical with respect to the plane containing the optical axis and the sub-scanning direction,

wherein the optical magnification of said imaging lens in the sub-scanning direction is constant over the effective scanning region, and

wherein said imaging lens is a single lens.

111. (Withdrawn) An optical scanner according to claim 110, wherein said imaging lens satisfies the following requirement:

the entrance face of said imaging lens has a cross section taken in the sub-scanning direction which is concave at the center of scanning and convex at either end of scanning.

112. (Withdrawn) An optical scanner according to claim 111, wherein said imaging lens has a surface that is aspheric in the main scanning direction.

113. (Withdrawn) An optical scanner according to claim 112, wherein said imaging lens has a surface having a point of inflection in the main scanning direction.

114. (Withdrawn) An optical scanner according to claim 112, wherein said light source has a plurality of light-emitting portions.

115. (Withdrawn) An optical scanner according to claim 114, wherein that element of the imaging lens which has such a surface that the curvature in the sub-scanning

direction varies continuously along the main scanning direction over the effective area of said imaging lens is made of plastic.